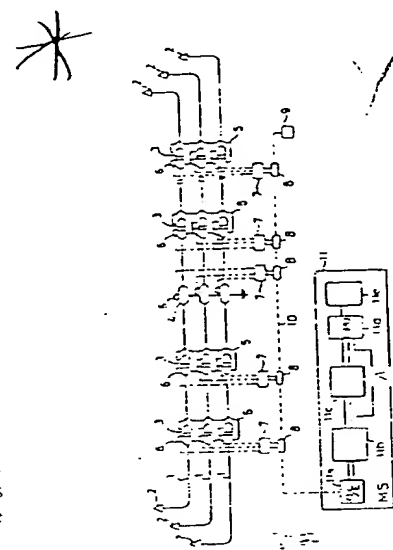


- (54) ACCIDENT-POINT LOCATING METHOD OF POWER CABLE  
 (11) 5-297052 (A) (43) 12.11.1993 (19) JP  
 (21) Appl. No. 4-101295 (22) 21.4.1992  
 (71) FURUKAWA ELECTRIC CO LTD:THE (72) SHOJI TOMIOKA(3)  
 (51) Int. Cl.<sup>5</sup> G01R31/08

**PURPOSE:** To provide an accident-point locating method wherein an accident point can be oriented by means of a simple system which uses at least one optical fiber as a transmission line transmitting the detection signal of an accident and the mounting position of a sensor is restricted comparatively little.

**CONSTITUTION:** When a dielectric breakdown accident is caused at power cables 1 or their connection parts 3, 4, a large acoustic signal is generated. Sensors 6 detect the acoustic signal and give it to optical modulation means 7, 8. The optical modulation means 7, 8 modulate an optical signal propagated on an optical fiber 10 by means of output signals from the sensors 6. The optical signal on the optical fiber 10 is given to a judgment means 11; the accident point of the power cables is oriented. Since it is sufficient to lay at least one optical fiber along the power cables 10, a system can be constituted simply. When the arrival time difference of the sound signal up to the sensors 6 is utilized, it is possible to find the distance up to the accident point from the sensors 6.

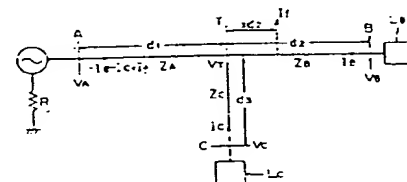


A: address signal, 11b: amplifier - demodulation, comparator, 11c: display of judged result

- (54) TROUBLE-POINT LOCATION METHOD OF GROUND FAULT  
 (11) 5-297053 (A) (43) 12.11.1993 (19) JP  
 (21) Appl. No. 4-106639 (22) 24.4.1992  
 (71) NISSIN ELECTRIC CO LTD (72) YASUHIRO YAMAMOTO(1)  
 (51) Int. Cl.<sup>5</sup> G01R31/08

**PURPOSE:** To judge in which branch a trouble point after a branch point is situated, to specify the trouble point and to perform the search operation of the trouble point by means of small efforts by a method wherein information on a power-supply end and on two receiving ends is used.

**CONSTITUTION:** The distance from a power supply end A in a resistance-grounded system three-terminal single-circuit transmission line up to a trouble point is calculated. When the calculated distance exceeds the distance from said power supply end A up to a circuit branch point T, values of formulae  $V_{TB} = V_B - Z_{BIB}$  and  $V_{TC} = V_C - Z_{CIC}$  are calculated respectively by use of the following: voltages  $V_B$ ,  $V_C$  at a trouble phase at other ends B, C; electric currents  $I_B$ ,  $I_C$  at the trouble phase; a positive-phase impedance  $Z_B$  at a circuit in a section TB; and a positive-phase impedance  $Z_C$  at a circuit in a section TC. When the value  $V_{TB}$  is smaller than the value  $V_{TC}$ , it is judged that the trouble point is situated in the section TB. When the value  $V_{TC}$  is smaller than the value  $V_{TB}$ , it is judged that the trouble point is situated in the section TC. The trouble point is located in the judged section.



- (54) METHOD AND APPARATUS FOR DETECTING POSITION OF LIGHTNING STRIKE  
 (11) 5-297054 (A) (43) 12.11.1993 (19) JP  
 (21) Appl. No. 4-126840 (22) 20.4.1992  
 (71) FURUKAWA ELECTRIC CO LTD:THE (72) OSAMU ASO(1)  
 (51) Int. Cl.<sup>5</sup> G01R31/08; G02B6/00

**PURPOSE:** To detect a thunderbolt fall position by making use of an optical composite overhead ground wire.

**CONSTITUTION:** When a thunderbolt 12 is caused in an optical composite overhead ground wire 3, lightning electricity which is propagated through a conductor wire 1 is detected by means of an electricity detection part 6 at a reception-side terminal station 5. The rotation-change of the polarization plane due to the thunderbolt of an optical signal which is transmitted to the side of the terminal station 5 from a terminal station 4 through an optical fiber 2 is passed through an analyzer 7 and then detected by means of a power meter 8. An operation part 11 detects the time of the thunderbolt by means of the detection signal of the electricity detection part 6; it detects the rotation time of the polarization plane by means of a signal from the power meter 8; it detects a distance (d) from the terminal station 5 up to a thunderbolt position on the

